Pediatric endoscopic retrograde cholangiopancreatography

Yeşim Öztürk[1], Mesut Akarsu[2]

[1]Department of Pediatric Gastroenterology, Hepatology and Nutrition, Dokuz Eylül University School of Medicine, İzmir, Turkey
[2]Department of Gastroenterology and Hepatology, Dokuz Eylül University School of Medicine, İzmir, Turkey

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See "Asenov Y, Akın M, Cantez S, Gün Soysal F, Tekant Y. Endoscopic retrograde cholangiopancreatography in children: Retrospective series with a long-term follow-up and literature review" on page 192.

Endoscopic retrograde cholangiopancreatography (ERCP) is a specialized diagnostic and therapeutic procedure that combines endoscopy and fluoroscopy. It is widely used in the adult population for pancreatic and biliary tract disorders. Although ERCP has become a widely used technique in children, but still experience with the technique has been limited. Relatively low frequency of diseases requiring ERCP in children, technical and equipment inadequacy, and anesthetic difficulties play a role in these limitations. In general, the procedure is performed by an adult endoscopist using adult-based equipment in children (1,2). The use of standard adult duodenoscopes for ERCP in children older than 12 months or weighing more than 10 kg has been shown to be safe and efficacious (3). Use of a pediatric duodenoscope is imperative in infants younger than 12 months and is preferred for small children. Pediatric duodenoscopes have a narrower working channel, and it is crucial to choose the right equipment such as sphincterotomes and stents for use in the procedure (4). Currently, there is a tendency to adopt the adult standard diagnostic and therapeutic approach for ERCP in pediatric patients. However, essentially, ERCP indications requiring special equipment, difficulties in anesthetic interventions, and necessity of therapeutic management are relatively different in children. A study by Asenov and colleagues entitled "Endoscopic retrograde cholangiopancreatography in children: Retrospective series with a long-term follow-up and literature review" reflects worldwide pediatric ERCP status and the related problems.

Twenty-four patients underwent ERCP in Asenov and collegues's study. The ERCP indications were found as choledocholithiasis and recurrent pancreatitis (50%), postoperative complications (21%). They successfully treated children with post-laparoscopic cholecystectomy stenosis and biliary leakage following surgery with ERCP. As an indication, the use of ERCP as a therapeutic option for postoperative complications is a relatively new field in developing pediatric ERCP. In the literature, pediatric ERCP indications are mostly biliary (54%) and pancreatic indications (38%). It is reported that, overall, 56% of ERCP procedures are therapeutic (5). Therapeutic ERCP rate was higher (71%) in Asenov and colleagues' study. The results of the study are promising for pediatric ERCP with high rate of therapeutic ERCP use, low rate of post-ERCP complications (4%), and long follow-up duration without complications.

A close working collaboration between an adult and a pediatric gastroenterologist is important during the preparation of a pediatric patient and the procedure itself. Moreover, endoscopists with pediatric (preferably) anesthesiologists have to discuss the anesthesia type and unexpected procedural risk during ERCP.

In many ways, pediatric patients are different from adults. For example, children frequently require much higher doses of sedative-hypnotic drugs on a milligram per kilogram basis than adults. Pediatric anesthesiologists, particularly trained nurses, help increase procedural success. Heart rate, oxygen saturation, and clinical status of a patient must be continuously monitored. Resuscitation medications and appropriate equipment should always be available. Furthermore, post-procedure monitoring is important and should be performed, especially by trained nurses and/or pediatric anesthesiologists (5,6).

Another issue is that there are no data about antibiotic prophylaxis for ERCP in children. ERCP is associated with a high risk for biliary obstruction in particular. Antibiotic prophylaxis for ERCP in pediatric patients is applied based on the principles used for adults. Asenov and colleagues did not use prophylactic antibiotics in their case series. Essentially, the use of antibiotic prophylaxis in pediatric ERCP is still unclear. However, Kohli et al. recently reported that the infectious complication risk after ERCP in pediatric liver transplant recipients is low and not relat-

Corresponding Author: ***Yeşim Öztürk; y.zaferozturk@gmail.com***

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ed to prophylactic antibiotics (7). Further systematic and standardized studies are needed on the use of prophylactic antibiotics for ERCP in children.

ERCP-related complication rate is 6% in the literature. This pooled complication rate was reported in a systematic review that contained 32 studies involving more than 3000 ERCPs in children (5). The complications include pancreatitis, infection, hemorrhage, and perforation; the most common complication is post-ERCP pancreatitis. The post-ERCP complications are observed more commonly in children undergoing therapeutic ERCP. In general, major complication rate is low (5,8). Asenov and colleagues did not note any major complication in their case series. Their post-ERCP complication rate was very low (only one patient with mild pancreatitis). Although long-term follow-up information was obtained in 67% subjects, follow-up duration was long (median, 18 years; range, 3.5-22.5 years), and they did not observe any long-term complications.

We need to extend our knowledge in this area to develop specific guidelines for children.

REFERENCES

1. *ASGE Technology Committee, Barth BA, Banerjee S, et al. Equipment for pediatric endoscopy. Gastrointest Endosc 2012; 76: 8-17.* **[CrossRef]**
2. *Torun S, Parlak E, Yıldız H, et al. Assessment of the endoscopic retrograde cholangiopancreatography grading system: A prospective study from a tertiary care center. Turk J Gastroenterol 2016; 27: 187-91.* **[CrossRef]**
3. *Yıldırım AE, Altun R, Ocal S, et al. The safety and efficacy of ERCP in the pediatric population with standard scopes: Does size really matter? Springerplus 2016; 5: 128.* **[CrossRef]**
4. *Guelrud M, Jaen D, Torres P, et al. Endoscopic cholangiopancreatography in the infant: evaluation of a new prototype pediatric duodenoscope. Gastrointest Endosc 1987; 33: 4-8.* **[CrossRef]**
5. *Usatin D, Fernandes M, Allen IE, et al. Complications of EndoscopicRetrograde Cholangiopancreatography in Pediatric Patients: A Systematic Literature Review and Meta-Analysis. J Pediatr 2016; 179: 160-5.* **[CrossRef]**
6. *Isik IA, Iyilikçi L, Ozturk Y, Adiyaman E. Sedation Practice Outside the Operating Room for Pediatric Gastrointestinal Endoscopy. Indian Pediatr 2015; 52: 989-90.* **[CrossRef]**
7. *Kohli DR, Shah TU, BouHaidar DS, Vachhani R, Siddiqui MS. Significant infections in liver transplant recipients undergoing endoscopic retrogradecholangiography are few and unaffected by prophylactic antibiotics. Dig Liver Dis 2018; 50: 1220-4.* **[CrossRef]**
8. *Giefer MJ, Kozarek RA. Technical outcomes and complications of pediatric ERCP. Surg Endosc 2015; 29: 3543.* **[CrossRef]**